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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/981,364

10/17/2001

Jonathan A. Nagel

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7590

09/22/2004

John P. Maldjian
Senior Patent and Trademark Counsel
TyCom (US) Inc.
250 Industrial Way West, Rm 2B-106
Eatontown, NJ 07724

EXAMINER

TRAN, DZUNG D

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/981,364	Applicant(s) NAGEL ET AL.	
	Examiner Dzung D Tran	Art Unit 2633	<i>AL</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 4 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Kakui US patent no. 6,549,315.

Regarding claims 1 and 9, Kakui discloses in figure 1, an optical communication system comprising: a transmitting station 2 (i.e. transmitter) configured to transmit a plurality of optical signals (for example, signals of L band having wavelengths 1574 nm, 1575 nm, 1576 nm.... 11605 nm) over an optical information channel (4_1-4_N , 1_1-1_N), each of said signals being at an associated wavelength in a range from about 1560 nm to about 1630 nm (for example, each of signals having wavelengths 1574 nm, 1575 nm, 1576 nm.... 11605 nm of L-band is in a range from about 1560 nm to about 1630 nm), see col. 1, lines 28-38, col. 5, lines 8-14, 33; and a receiving station 2 (i.e. receiver) configured to receive said plurality of optical signals.

Regarding claim 2, Kakui discloses optical information channel comprises at least one repeater station 1_1-1_N that includes L-band optical amplifier 300 configured to

amplify said range of L- band wavelengths (figures 1, 2, col. 5, lines 5-6, 21-22, col. 6, lines 4348-49).

Regarding claim 4, Kakui further discloses optical amplifier is an erbium doped fiber amplifier (col. 6, lines 57-59).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5, 6, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kakui US patent no. 6,549,315 in view of 765 Gb/s over 2,000 Km transmission using C and L band EDFA, Matthew Ma et al. OFC'99, Postdeadline papers, PD16 (1999), pp1-3.

Regarding claims 5, 6 and 10, as per claims above, Kakui discloses all the limitations except for optical information channel spans at least 2,000 km between said transmitter and said receiver. Ma, from the same field of endeavor, discloses an optical transmission system using L-band amplifier that transmit the L band channels over the spans of more than 2000 Km (PD16-1, first paragraph PD16-2, last paragraph). At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to include the teaching of Ma in the system of Kakui. One of ordinary skill in the art would have been motivated to do this in order to transmit the acceptable optical

signal from the transmitter end to the receiver end over the long –haul optical communication system (2000 Km or more) and improve the noise figure (PD16-2-PD16-3).

Regarding claim 8, Kakui further discloses optical amplifier is an erbium doped fiber amplifier (col. 6, lines 57-59).

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kakui US patent no. 6,549,315 in view of 765 Gb/s over 2,000 Km transmission using C and L band EDFA, Matthew Ma et al. OFC'99, Postdeadline papers, PD16 (1999), pp1-3 and further in view of Sasaoka et al. US pub. No. 2001/0014194.

Regarding claim 7, as per claims above, the combination of Kakui and Ma discloses all the limitations and Kakui further discloses the excitation light source 352 had a wavelength of 1480 nm for supplied the optical power for amplification optical wave-guide 312 for L-band. However, Kakui does not specific disclose optical amplifier is a Raman amplifier pumped. Sasaoka disclose an optical transmission system with an optical fiber 31 and a pump light source for Raman amplification (figure 1, page 2, paragraph 0028). At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to include the Raman amplifier of Sasaoka in the system of Kakui. One of ordinary skill in the art would have been motivated to do this in order to minimizes the transmission loss in an optical fiber (page 1, paragraph 0012).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kakui US patent no. 6,549,315 in view of Sasaoka et al. US pub. No. 2001/0014194.

Regarding claim 3, as per claims above, Kakui discloses all the limitations and further discloses the excitation light source 352 had a wavelength of 1480 nm (col. 8, lines 45-48) for supplied the optical power for amplification optical wave-guide 312 for L band. However, Kakui does not specific disclose optical amplifier is a Raman amplifier pumped. Sasaoka disclose an optical transmission system with an optical fiber 31 and a pump light source for Raman amplification (figure 1, page 2, paragraph 0028). At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to include the Raman amplifier of Sasaoka in the system of Kakui. One of ordinary skill in the art would have been motivated to do this in order to minimize the transmission loss in an optical fiber (page 1, paragraph 0012).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Emori et al. U.S. patent no. 6,633,697. Raman amplification method and optical signal transmission method using the same

b. Copeland et al. U.S. patent no. 6,782,209. Optical transmission systems including optical amplifier and methods

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c. Liang et al. U.S. patent no. 6,493,133. System and method for increasing capacity of undersea cables

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung Tran whose telephone number is (571) 272-3025.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Jason Chan, can be reached on (571) 272-3022.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Dzung Tran

09/17/2004


JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600